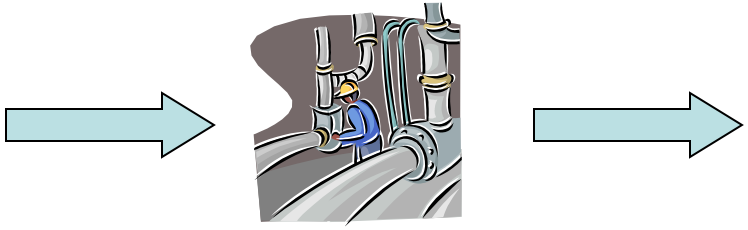
Navajo Refining Company (NRC)

Petroleum Industry Segments

Upstream
- Exploration
- Production

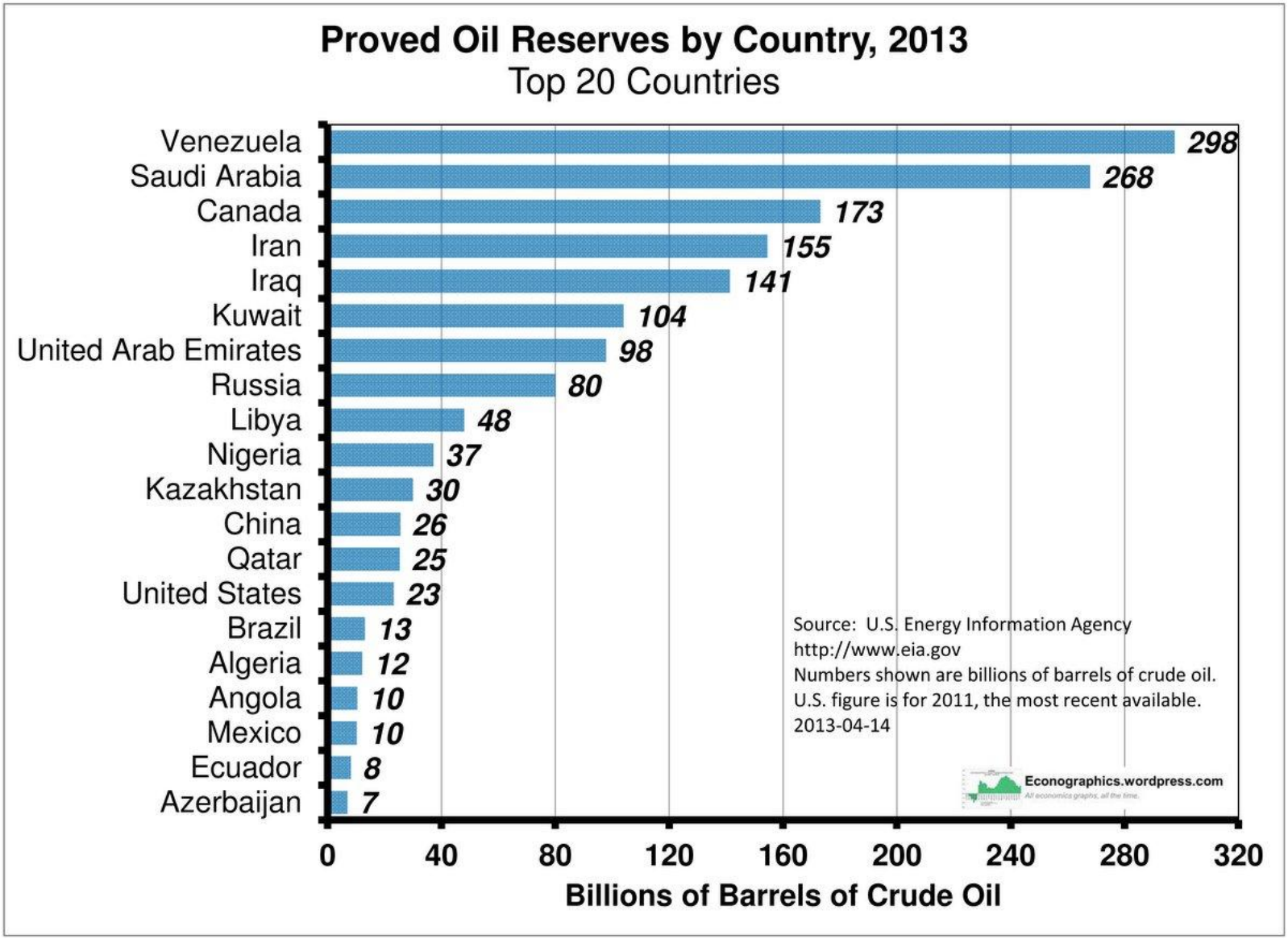
Manufacturing
- Refining
- Petrochemical

Marketing
- Wholesale
- Retail

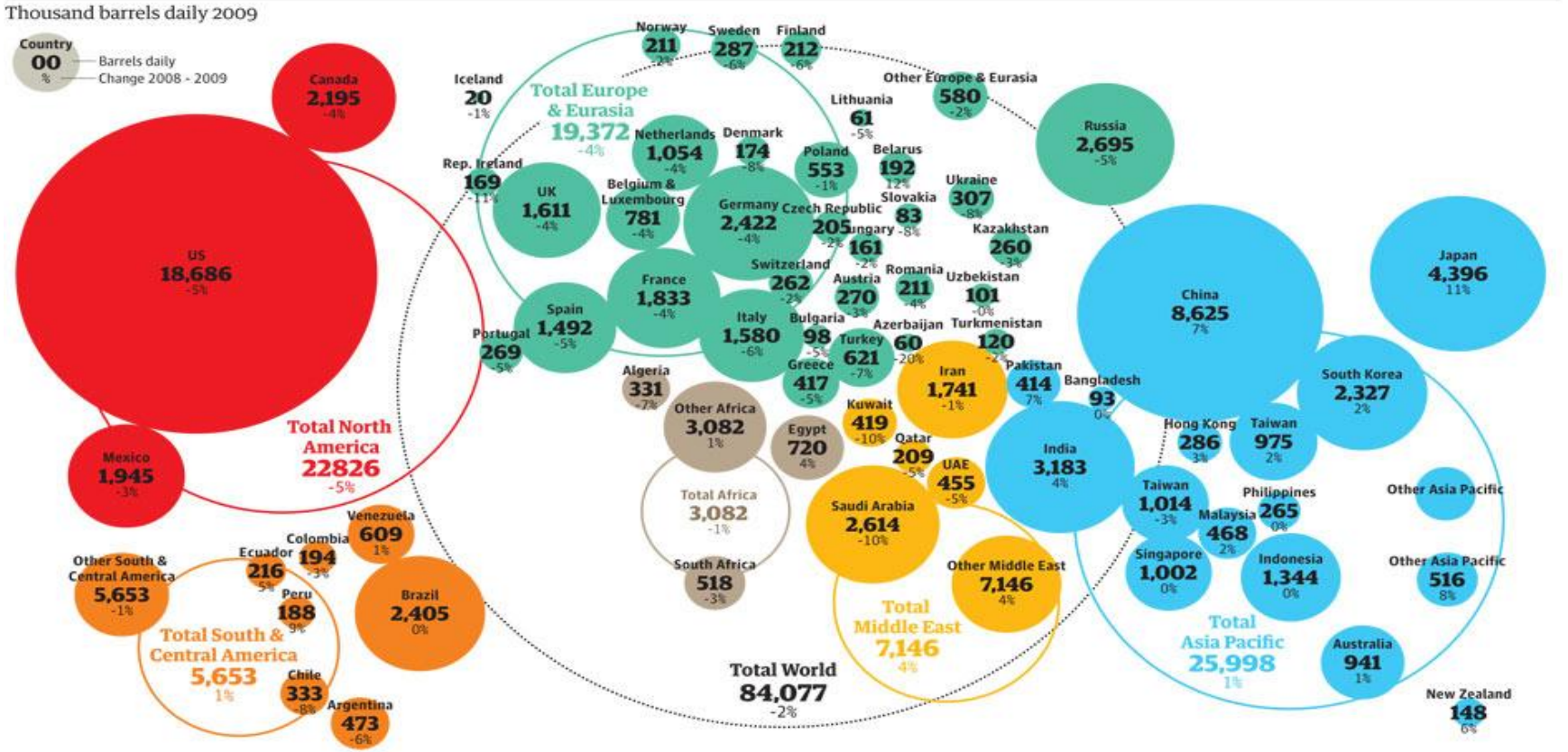


Transportation (Pipeline, Ship, Rail, Truck)

World Wide Crude Oil Reserves



Oil consumption around the world

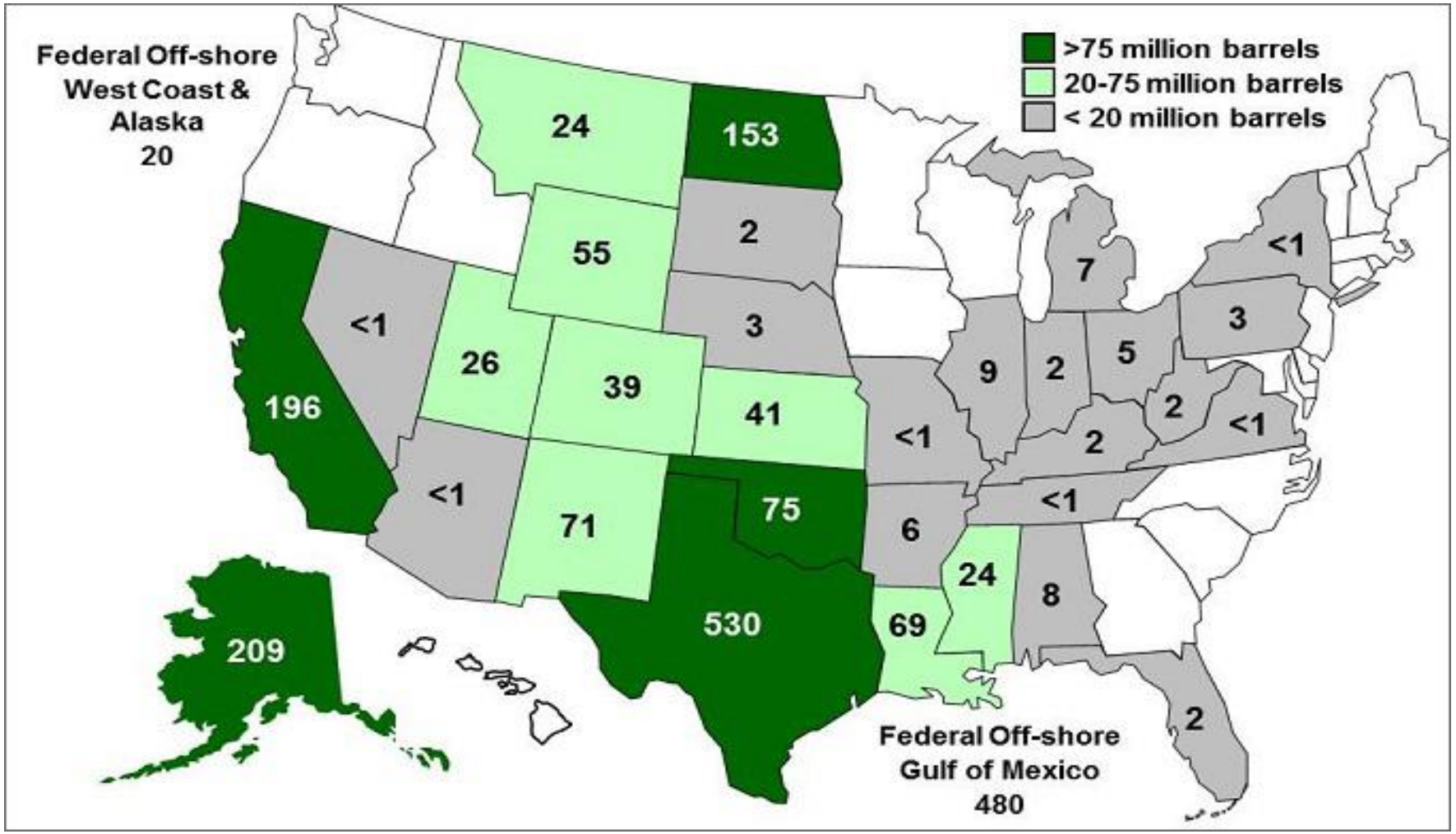


SOURCE: BP STATISTICAL REVIEW OF WORLD ENERGY

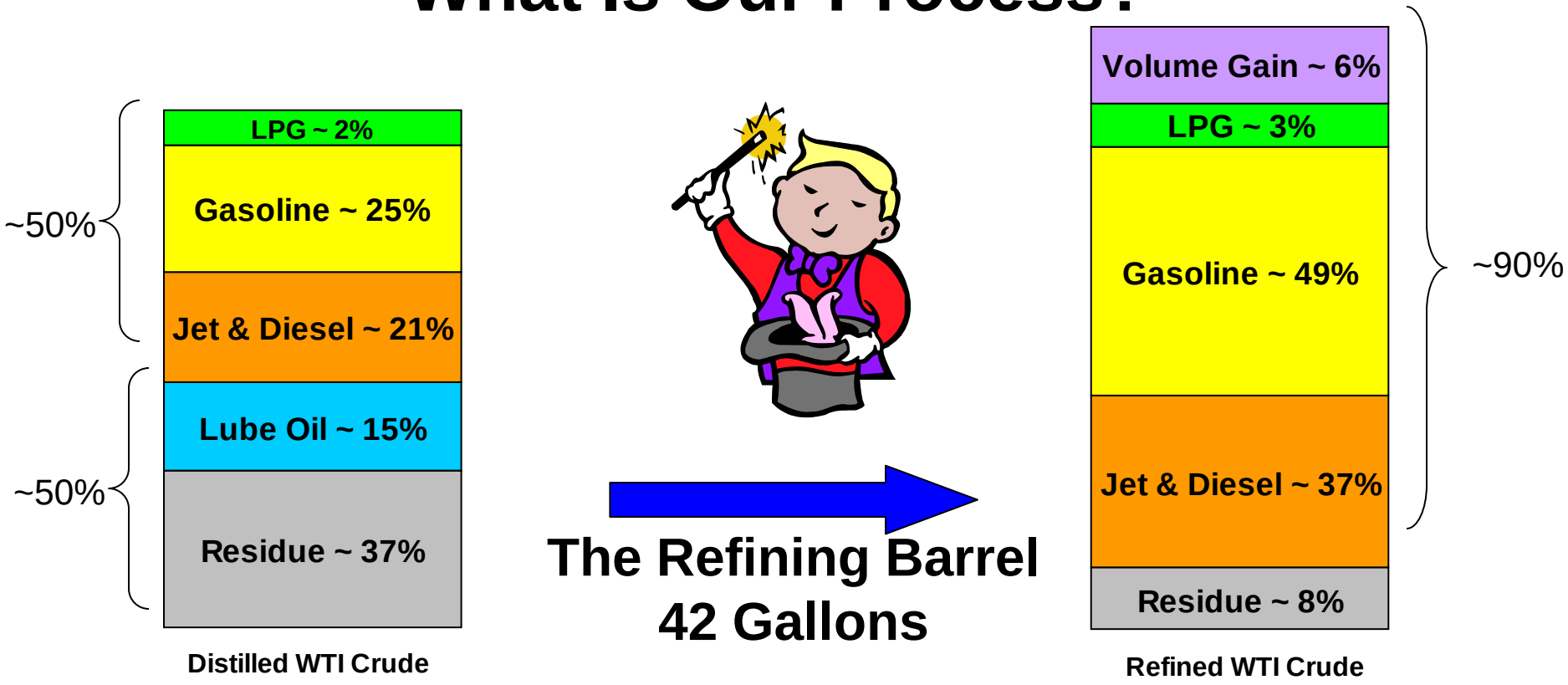
World oil consumption

Thousand barrels daily, 1965 - 2009

UNITED STATES CRUDE OIL PRODUCTION BY STATE



NAVAJO Refinery
What Is Our Process?



- A refinery maximizes the conversion of crude oil into desirable products (transportation fuels)
- At 100 MB/D of crude oil, we make enough gasoline each day to fill up 257,000 automobiles with 8 gallons each

TOP TEN LARGEST REFINERIES IN THE WORLD

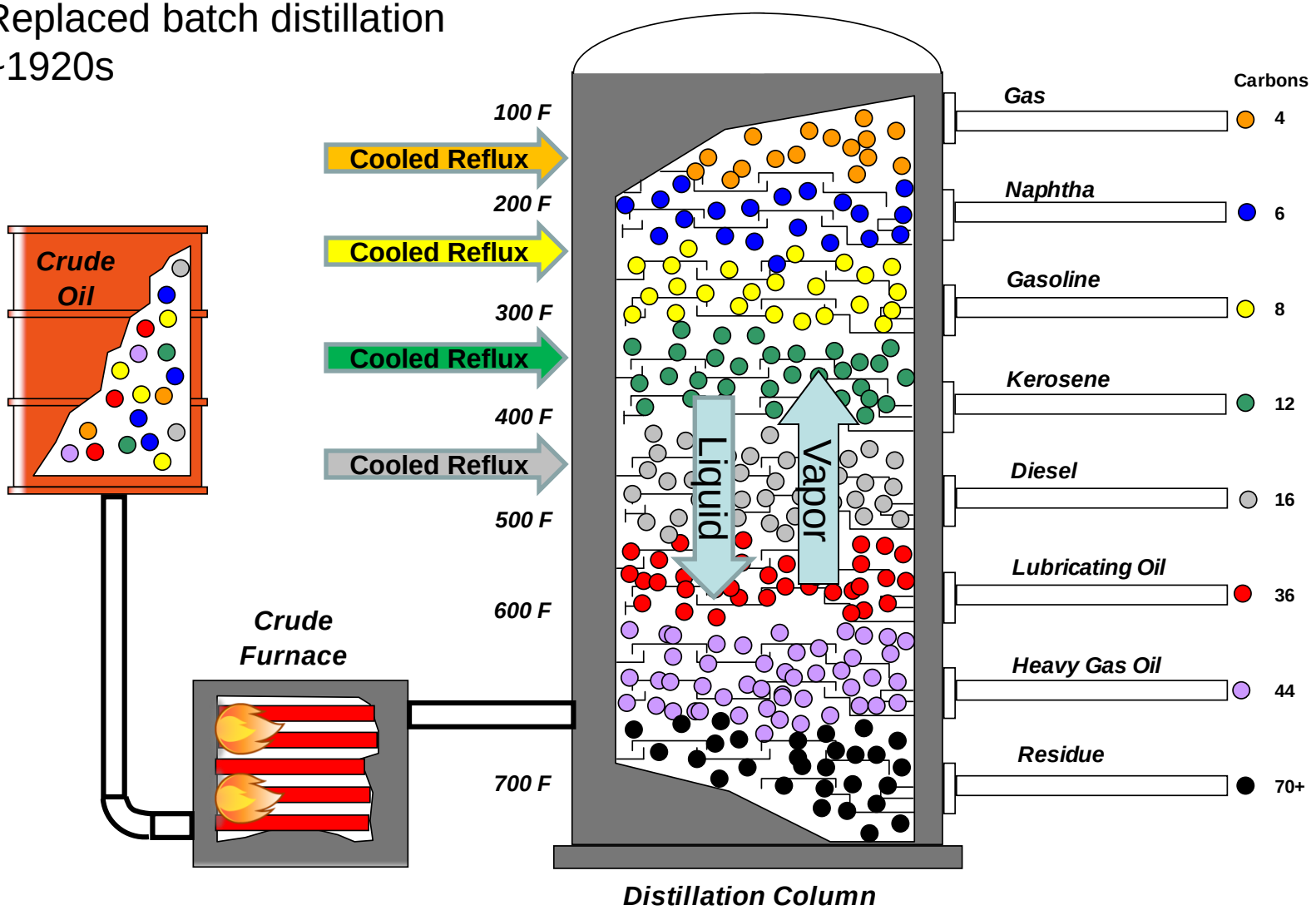
Name of Refinery	Location	Barrels per Day
Jamnagar Refinery (Reliance Industries Limited)	Jamnagar, Gujarat, India	1,240,000[2]
Paraguana Refinery Complex (PDVSA)	Paraguana, Falcon, Venezuela	940,000
SK Energy Co., Ltd. Ulsan Refinery (SK Energy)	Ulsan, South Korea	850,000
GS Caltex Yeosu Refinery (GS Caltex)	Yeosu, South Korea	730,000
ExxonMobil	Singapore	605,000
Port Arthur Refinery (Motiva Enterprises)	Port Arthur, Texas, USA	600,000
Baytown Refinery (ExxonMobil)	Baytown, TX, USA	572,500
Ras Tanura Refinery (Saudi Aramco)	Saudi Arabia	550,000
S-Oil Ulsan Refinery (S-Oil)	Ulsan, South Korea	503,000
Marathon Petroleum Refinery (Marathon Petroleum)	Garyville, LA	490,000

Refinery Processes

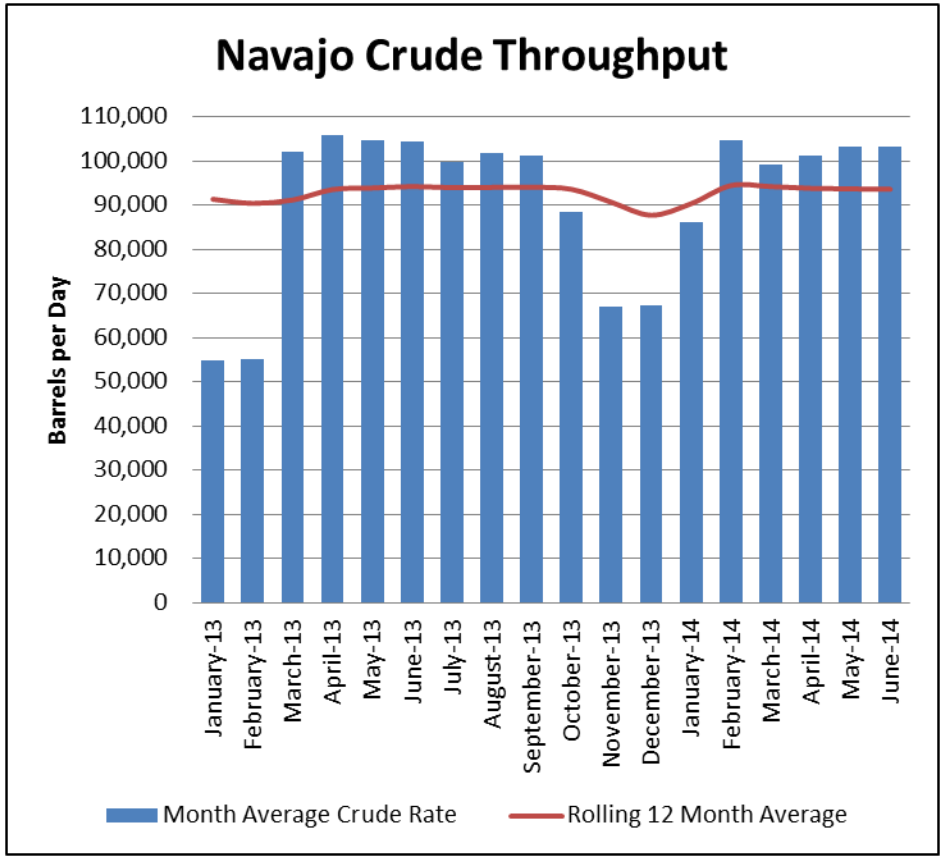
- **Distillation / Fractionation** – Heating liquid to mostly vapor, then condensing the vapor into different fractions to produce desired boiling range mixture (fraction or cut)
- **Conversion (Cracking and Reforming)** – Using catalysts and / or heat, convert molecules into different sizes and configurations to achieve desired properties
- **Treating (Hydrotreating, Chemical Treating)** – Using catalysts and chemicals, remove impurities from the fractions
- **Combining** – Using catalysts and chemicals, combine molecules to form others
- **Blending** – Blend various fractions together to obtain desired finished product properties

Fractional Distillation Column

Replaced batch distillation
~1920s



Crude Throughput



- 2013 Crude Average 87,737 bpd
- April 2013 set new Crude Throughput Record (105,926 bpd)
- 2nd Quarter Averaged 105,017 bpd
- 2014 Crude 1st half average 99,577 bpd

Crude Slate – NRC Typical

Crude Type	Origin	LV%	API	Wt% Sulfur
Artesia Gathering	New Mexico	45%	36.7	0.74
Russell	Texas	20%	34.0	1.68
Bonesprings - Hackberry and Parkway Fields	New Mexico	13%	39.4	0.38
Crouch	New Mexico	9%	36.7	0.84
Monument Sour	New Mexico	6%	33.1	1.29
Monument, ABO and Enterprise Sweet	New Mexico	4%	38.6	0.51
Western Canadian Select (WCS)	Canada	3%	20.3	3.43
Total (average)		100%	35.9	0.99

Annualized Production

(excluding Fuel Gas Produced)

2013 Annualized Production	BPD	LV%
Propane	821	0.9%
Gasoline	44,702	49.2%
ULSD	36,079	39.7%
Fuel Oil	5,392	5.9%
Asphalt	2,774	3.1%
Sulfur	290	0.3%

NAVAJO Refining Capacity

Unit	BBLS/Day	Units
Crude	100,000	2
ROSE	18,000	1
FCCU	27,000	1
Reforming	24,000	1
Alkylation	10,000	1
Naphtha Hydrotreating	36,000	2
Kero / Diesel Hydrotreating	39,000	2
FCC Feed Hydrotreating	30,000	2
Isomerization	10,000	1
H2 Production (MMSCFD)	38	2
Sulfur Recovery (LTPD)	200	2
Hydrocracker	15,000	1

NAVAJO REFINERY

- Locations in Artesia and Lovington, New Mexico
- Rated at 100,000 B/D of crude oil capacity
- Processes Permian basin crude oils and Western Canadian
- Serves markets in Southwestern United States and Northern Mexico

People in the Refinery

Operations

- **Control Board Operators**
- Outside Operators
- Operating Specialists (Day Support)
- Contractors (coke cutting, 3rd party facility operators)
- Trainers

Administrative

- Management
- Purchasing agents
- Warehouse workers
- **Accountants**
- Office assistants

Maintenance

- Pipefitters / Boilermakers
- **Welders**
- Instrumentation & Electrical
- **Rotating Equipment Mechanics**
- Equipment Operators
- Scaffold Builders, Insulators, Carpenters
- Contract Services
- Turnaround contractors
- Maintenance Planners

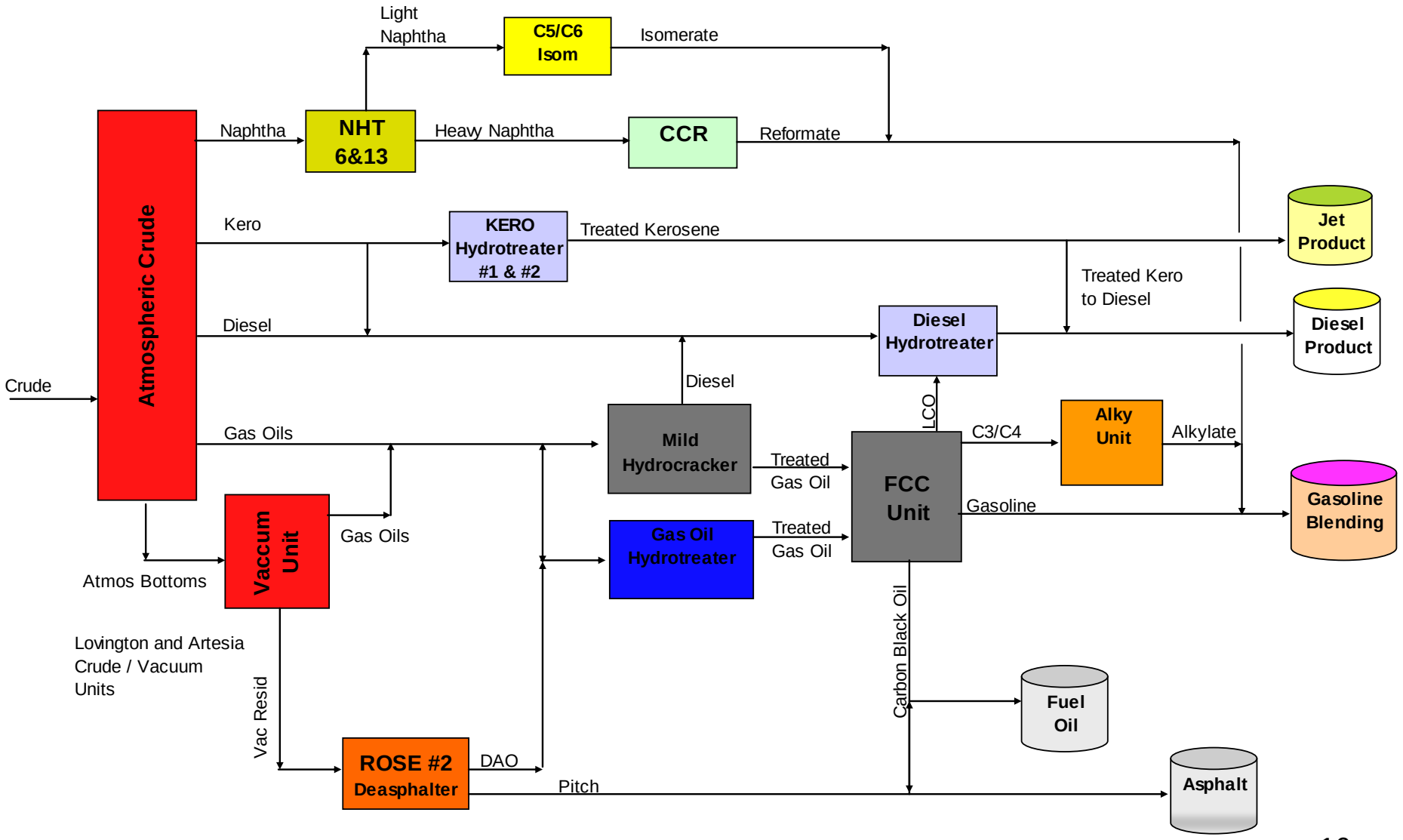
Technical

- Chemical, Mechanical, Electrical, Control Engineers
- **Safety, Health, Environmental Engineers / Specialists**
- Equipment Inspectors
- Laboratory Technicians, **Chemists**
- Project Engineers, Designers
- Technical Trainers
- Outside consultants, technical experts

We employ 400 HFC employees directly, 150 contract employees and impact over 500 3rd party associates

Navajo

HOLLYFRONTIER



Holly Frontier Network

What Differentiates Navajo Refining Company?

- Consists of Two Facilities
  - Lovington Crude Processing 65 miles away
  - Intermediates Sent to Artesia for Processing
- Refinery Location Niche Accessible to Multiple Major Metropolitan Areas
  - Phoenix, Albuquerque, El Paso, Mexico
- Local Crude Processing (Artesia Gathering)
- WWTU Outfall Directly to Injection Wells
- Inline Blending to Pipeline